

Remarks

Claims 1-27 are pending in the present application and are rejected.

Independent claims 1 and 21 are amended to remove “the second substrate being electrically insulating and adjacent to the first substrate” and to add the step of “assembling the first substrate coated with the permanent magnetic elements and the second substrate coated with the planarized coils into an electric machine.” Claims 1 and 21 are further amended to include the limitation “the permanent magnetic material is different than the soft magnetic binder.” Independent claim 12 is amended to include “so that an electric machine is assembled, the first substrate coated with the permanent magnetic elements formed in step a).” The different nature of the binder and magnetic material is implicit to the invention and clear to one skilled in the art since these material as disclosed as having different properties. Moreover, the antecedent basis for the limitation regarding the binder and permanent magnetic elements being different is provided by Figure 2 which shows these materials to be different. The antecedent basis for this amendment is found in the Specification in paragraphs [58] and [60]. These paragraphs when read together make it clear that the magnets and coils are first formed and the subsequently assembled into an electric machine.

Paragraph [51] is amended to include samarium iron nickel, nickel and cobalt as suitable choices for permanent magnetic material as disclosed in the originally filed claims.

1. Claim Rejections Under 35 U.S.C. § 112

Claims 1-10, 12-19 and 21-26 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Independent claims 1 and 21 are amended to remove “the second substrate being electrically insulating and adjacent to the first substrate” and to add the step of “assembling the

first substrate coated with the permanent magnetic elements and the second substrate coated with the planarized coils into an electric machine.” These amendments remove the ambiguity regarding the meaning of adjacent. Furthermore, the amendment clarifies the temporal nature and sequencing of the method of forming the magnetic devices.

Independent claim 12 is amended to include “so that an electric machine is assembled, the first substrate coated with the permanent magnetic elements formed in step a).” This amendment removes the ambiguity regarding “adjacent” in that now the coils must be sufficiently close to the first substrate to form an electric machine. The latter limitation makes it clear that assembly of the machine occurs after the first substrate is coated with the permanent magnetic elements.

For at least these reasons, claims 1-10, 12-19 and 21-26 are patentable under 35 U.S.C. § 112, second paragraph.

Claims 1-10, 15 and 21-26 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Independent claims 1 and 21 are amended as set forth above to remove the ambiguity regarding the temporal sequencing of the steps thereby rendering this rejection moot.

The Specification is amended to include samarium iron nickel, nickel and cobalt as suitable choices for permanent magnetic material. Iron is already identified as a potential useful permanent magnetic material - “it is possible to form a permanent magnet from the pure iron material by exposure to high magnetic fields.” Specification, paragraph [51]. The amendments to independent claims 1 and 21 preclude the binder and permanent magnetic material from being the same.

For at least these reasons, claims 1-10, 15 and 21-26 are patentable under 35 U.S.C. § 112, first paragraph.

2. Claim Rejections Under 35 U.S.C. § 103

Claims 12-15, (16-18) and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gambino et al., U.S. Patent No. 6,773,765 B1 in view of Alkhimov et al., U.S. Patent No. 5,302,414 or Van Steenkiste et al., U.S. Patent No. 6,139,913, and further in view of Wehde, U.S. Patent No. 3,739,248 or Porrazzo et al., U.S. Patent No. 6,237,891 and/or admitted prior art.

Applicants traverse the present rejection for the following reasons. Applicants respectfully assert that the Examiner has used hindsight to reconstruct the present the invention of independent claim 12 through an assembly of prior art references.

The Examiner admits that the main reference Gambino et al. is deficient in several important ways. Gambino et al. discloses a method that "includes the step of thermal spraying a first spray stream of composite particles, which include magnetic particles incorporated into or onto a matrix material." (Gambino et al., col. 3, ll. 21-28.) Although the Examiner downplays the differences between thermal spray and kinetic spray processes, thermal spray methods are fundamentally different than the kinetic spraying technique of the present invention. In the thermal spray techniques a heat source is used to melt a material which is subsequently atomized and then directed to a substrate (see, for example, U.S. Patent No. 6,513,728). Kinetic spray processes do not use such a heat source in this manner. The Specification clearly and unequivocally explains:

[0009] Thermal spray has the advantage of being capable of rapidly producing a layer of bulk material atop a carrier, but the heat needed to create the molten metal droplets can alter the magnetic properties of the sprayed material. Another family of thermal spray technologies that does not use high temperatures

for producing molten droplets is collectively known as kinetic spraying. . .

[0007] The invention described herein utilizes the "cold spray" process to produce electric machine elements as "coatings" or deposits on an appropriate substrate or carrier.

Specification, paragraphs 6 and 7

The Examiner continues to ignore the important differences between kinetic spraying and thermal spraying and treats the two processes interchangeably. Moreover, as explained, the droplet formed by thermal spray can alter the magnetic properties of the sprayed material. Clearly, this is undesirable in the present application.

The Examiner utilizes Alhkimov et al to remedy the deficiency of Gambino regarding the kinetic spray process. The Examiner provides alleged motivation for this combination by stating the Alhkimov discloses a proces that "preserves important properties of coating materials." However, Alhkimov et al. disclose preservation of structural properties:

. . . initial structure of the powder material be substantially preserved, without phase transformations, appearance of oversaturated structures, and hardening during the application and formation of coatings, efficiency of acceleration of applied powder particles be enhanced . . .

Alhlimov et al. col 3, ll. 58-63

Alhkimov et al does not disclose a process in which magnetic properties are preserved. It is this property that is most relevant to the present invention.

Gambino et al. and Alhlimov et al. each fail to disclose the step of placing one or more coils adjacent to the first substrate having magnetic elements as required by claim 12. The Examiner attempts to use Wehde and Porrazzo et al. to remedy this deficiency. However, there is no motivation for combining these references with the thermal spray process of Gambino et al. or the kinetic spray process of Alhkimov et al. It is of course known that

electric machines includes magnets and coils. Neither Wehde nor Porrazzo et al. provided substantially more than this fact.

Accordingly, for at least these reasons, claims 12-15, (16-18) and 19 are patentable under 35 U.S.C. § 103(a) over Gambino et al. in view of Alkhimov et al., U.S. Patent No. 5,302,414 or Van Steenkiste et al. and further in view of Wehde or Porrazzo et al., and/or alleged admitted prior art.

Claims 1-5, 7-10, 12-15, (16-18), 19 and 21-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Alkhimov et al., U.S. Patent No. 5,302,414 or Van Steenkiste et al., U.S. Patent No. 6,139,913, and in view of Wehde, U.S. Patent No. 3,739,248, or Porrazzo et al., U.S. Patent No. 6,137,891 and/or admitted prior art.

Claims 1 and 21 are amended to include the limitation “the permanent magnetic material is different than the soft magnetic binder.” It appears that the possibility of the magnetic material and the binder being the same material was critical to this rejection. Applicants also rely on the analysis set forth above regarding the references relied upon for this rejection.

Accordingly, claims 1-5, 7-10, 12-15, (16-18), 19 and 21-26 are patentable under 35 U.S.C. § 103(a) over Alkhimov et al. or Van Steenkiste et al. and in view of Wehde or Porrazzo et al., and/or admitted prior art.

3. Double Patenting Rejection

Claims 1-5, 7-8, 12-16, 19 and 21-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 3, 5-6, 8-9 and 11-15 of U.S. Patent No. 6,773,763.

Applicants will file a properly executed Terminal Disclaimer upon the indication of allowable subject matter but for the double patenting rejection.

Claims 1-10, 12-19 and 21-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-6, 8, 10 and 12-13 of U.S. Patent No. 6,592,935 in view of Wehde, U.S. Patent No. 3,739,284, or Porrazzo et al., U.S. Patent No. 6,137,891, and/or admitted prior art.

Applicants will file a properly executed Terminal Disclaimer upon the indication of allowable subject matter but for the double patenting rejection.

Claims 1-10, 12-19 and 21-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 47, 51-56, 58 and 61-67 of copending Application No. 10/463,747 in view of Wehde, U.S. Patent No. 3,379,248, or Porrazzo et al., U.S. Patent No. 6,137,891 and/or admitted prior art.

Applicants will file a properly executed Terminal Disclaimer upon the indication of allowable subject matter but for the double patenting rejection.

Conclusion

Applicants have made a genuine effort to respond to each of the Examiner's objections and rejections in advancing the prosecution of this case. Applicants believe that all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested. If any additional issues need to be resolved, the Examiner is invited to contact the undersigned at his earliest convenience.

Applicants believe that no additional fee is required. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

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Respectfully submitted,

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